HIRDLS

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HIGH RESOLUTION DYNAMICS LIMB SOUNDER

Originator: C. Craig

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Subject/Title: H2CLP_Driver

Description/Summary/Contents: This is the main routine for the H2CLP subsystem. H2CLP_Driver reads in the gridded apriori and climatology files and creates HIR2CLCC and HIR2CLCA files at the same lat/lon/times as the HIRRAD file. **H2CLP_ Driver: "Collocate" – Part of CLG step – Creates time/lat/long collocated GMAO file from gridded GMAO input data.**

Keywords:

Purpose of this Document:

Oxford University
Atmospheric, Oceanic & Planetary Physics
Parks Road
OXFORD OXI 3PU
United Kingdom

University of Colorado, Boulder
Center for Limb Atmospheric Sounding
3450 Mitchell Lane, Bldg. FL-0
Boulder, CO 80301

EOS

H2CLP_Driver

This is the main routine for the H2CLP subsystem. H2CLP_Driver reads in the gridded apriori and climatology files and creates HIR2CLCC and HIR2CLCA files at the same lat/lon/times as the HIRRAD file.

Retrieve the filenames for the output HIR2CLCC and HIR2CLCA files and the input HIRRAD file

Open the HIRRAD file, read in the data

If clmflg is true

Open the HIR2CLIM file and read in static data

Create the output HIR2CLCC file (using information from the HIR2CLCC definition file)

Read in the fields from the HIR2CLIM file which are requested to be output in the HIR2CLCC file

Write out header and static data to the HIR2CLCC file

If aprflag is true

Open the HIR2APR file and read in static data

Create the output HIR2CLCA file (using information from the HIR2CLCA definition file)

Read in the fields from the HIR2APR file which are requested to be output in the HIR2CLCA file

Write out header and static data to the HIR2CLCA file

If clmflg is true

Colocate the HIR2CLIM data to the HIRRAD lat/lon/times and write out the data to the HIR2CLCC file-*H2CLP*

If aprflg is true

Colocate the HIR2APR data to the HIRRAD lat/lon/times and write out the data to the HIR2CLCA file-*H2CLP*

If requested, replace temp/press, O3 and/or H2O apriori values with GMAO collocated data-*H2CLP_RepAprWthGMAO*

If requested, adjust the apriori errors-*H2CLP_AprErrAdj*

If clmflg is true

    Write out the collocated climatology data to the HIR2CLCC file and close the file

If aprflg is true

    Write out the collocated climatology data to the HIR2CLCA file and close the file

Close the HIRRAD file

H2CLP

This subroutine is called from H2CLP_Driver. Interpolate the input climatology data to the input HIRRAD latitude and time for each parameter in the input climatology file. Interpolation is bilinear type.

Loop over all times in the HIRRAD file

Calculate the day of year from the TAI time (use Toolkit calls)

… (Joe's routine – I've not been in it)

H2CLP_RepAprWthGMAO

This subroutine replaces some fields in apriori data with collocated GMAO values. Collocating of GMAO data must occur before this step is run. The fields to replace are specified in the user setup file (USF) and are transferred into the CFG file by the rl2 script.

Open the Collocated GMAO file (HIR2CLCG) and read in the temperature, pressure, O3 and H2O

Perform tie-on of GMAO data to apriori-*H2CLP_GMAOTieOn*

If set GMAO Temperature in apiori , replace both temperature and pressure apriori data with GMAO data

If set GMAO O3 in apriori, replace O3 apriori data with GMAO data

If set GMAO H2O in apriori, replace H2O apriori data with GMAO data

H2CLP_GMAOTieOn

This routine puts the requested GMAO data inside the apriori profile and adjusts the remaining points in the profile.

For each profile

Determine the min/max altitude indices for the GMAO data

If there are missing points above or below the GMAO Temperature

Find the difference of the apriori data minus GMAO at the last points which overlap

Subtract this difference off the remainder of the apriori Temperature profile

If there are missing points above or below the GMAO Pressure

Find the ratio of the apriori data minus GMAO at the last points which overlap

Multiply this ratio to the remainder of the apriori Pressure profile

If there are missing points above or below the GMAO O3

Find the ratio of the apriori data minus GMAO at the last points which overlap

Multiply this ratio to the remainder of the apriori O3 profile

If there are missing points above or below the GMAO H2O

Find the ratio of the apriori data minus GMAO at the last points which overlap

Multiply this ratio to the remainder of the apriori H2O profile

H2CLP_AprErrAdj

This routine adjusts the apriori errors. There are separate criteria for Temperature, Pressure, VMR, O3, and Aerosols (referred to as "type" in the writeup below).

Count how many of each type of apriori error there are

Loop over profiles

> Determine the altitude cutoff based on the max of the CloudTopAltitude and the specified upper cutoff height for each type
>
> For every level at and below the altitude cutoff, multiply the apriori error by the specified adjustment factor for each type